

Motorola **HOME** Radio

SERVICE MANUAL

1946 MODEL 85K21

GENERAL INFORMATION

TYPE - 8 tube phonograph-radio with loop antenna in upright console type cabinet.

TUBE COMPLEMENT - 6SG7 Mixer, 6J5 Oscillator, 6SG7 I.F. Amplifier, 6SQ7 Detector, AVC and 1st A.F. Amplifier, 6SQ7 Phase Inverter, 2- 6K6GT Power Amplifier and 5Y3GT Rectifier.

POWER SUPPLY - 117V A.C. 85 Watts

TUNING RANGE: - 2 Bands; BC - 535-1620 Kc
SW - 5.6-12.2 Mc

PUSHBUTTON TUNER - 6 button manually operated type.

RECORD CHANGER - B-27-RC (For complete record changer information refer to Motorola Record Changer Service Manual Part No. 54P75094.)

POINTER & DRIVE CORD RESTRINGING

Refer to Figure 1 for dial cord restringing instructions. Use 18 lb. fishline for both cords.

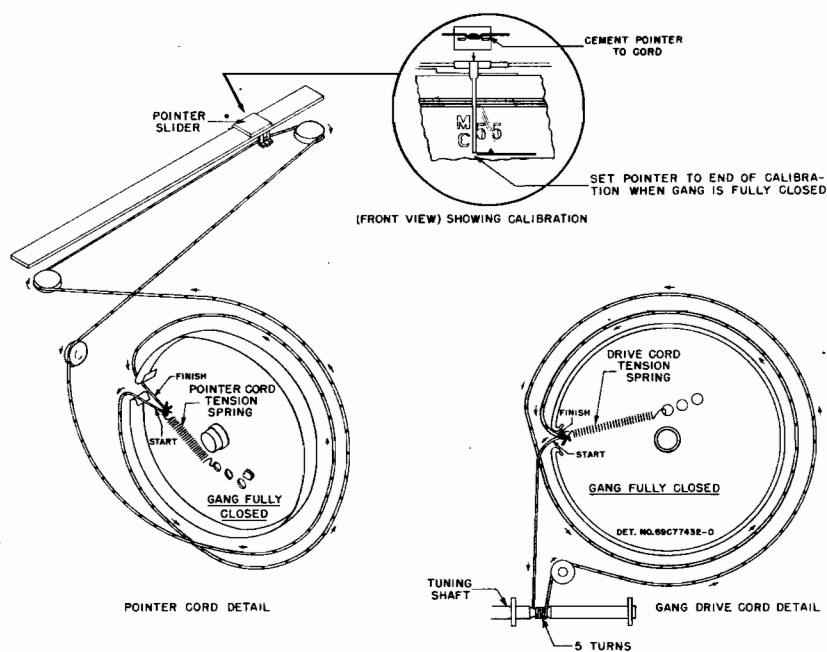


FIGURE 1. POINTER AND DRIVE CORD RESTRINGING DETAIL

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ALIGNMENT

Refer to Figure 2 for location of adjustment trimmers and cores. Connect a low range output meter across speaker voice coil. Volume control should be set at maximum for all operations.

The signal generator used, should possess good frequency stability and should be of the modulated type. For greatest accuracy, keep the receiver output at approximately 50 milliwatts (.38V on output meter) during alignment. Vary signal generator output (not receiver volume control) to maintain this output during alignment.

Step	Gang Setting	Band	Dummy	Generator Connected to	Generator Frequency	Trimmer or Core	Remarks
1	Fully opened	B.C	.1mf	Mixer grid & chassis	455 kc	1, 2, 3, & 4	Adjust I.F. & Diode trans. for maximum
2	Fully opened	B.C	-	Radiation loop*	1620 kc	5	Set oscillator to dial scale
3	1400 KC	B.C	-	Radiation loop*	1400 kc	6 †	Tune signal generator for max. on output meter, then peak trimmer.
4	12.2 MC	SW	50mmf	Short wave antenna terminal	12.2 Mc	7	Set osc. to dial scale.
5	11.5 MC	SW	50mmf	Short wave antenna terminal	11.5 Mc	8	Tune signal generator for max. on output meter, then peak trimmer.

† Repeat after chassis and loop are installed in cabinet.

* Connect output of signal generator to a 5" diameter, 3 turn loop. With volume on full, bring loop close enough to receiver until output of 50 milliwatts is obtained (.38V on output meter). Vary distance between generator and receiver loops to maintain this output during alignment. Minimum distance between loops should never be less than 12".

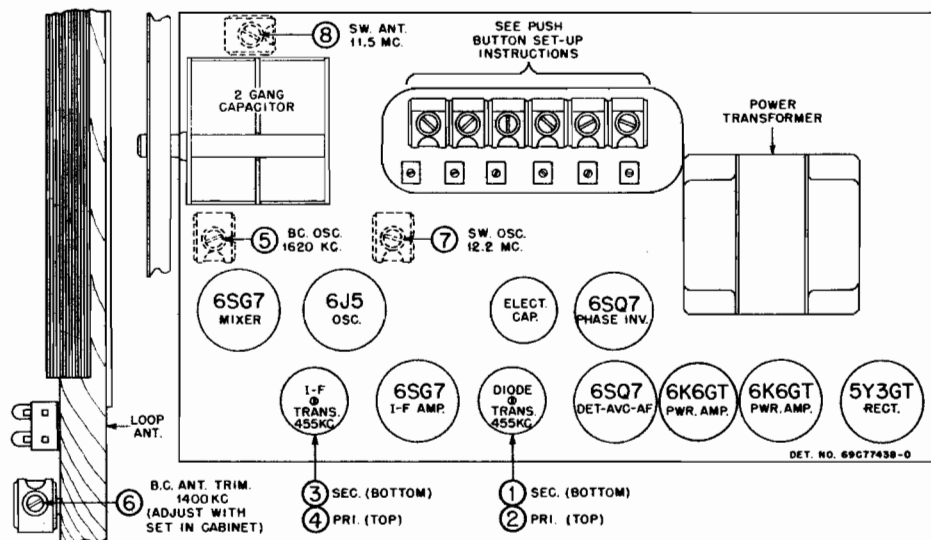


FIGURE 2. TUBE & TRIMMER LOCATIONS

INSTRUCTIONS FOR SETTING PUSH BUTTONS

1. Turn the radio "on" and allow it to warm up for a period of at least fifteen minutes.
2. Make a list of the frequencies of the nearby stations you wish to tune in automatically. It is recommended that you select the most powerful stations.
3. Turn the band switch to "BC" position and carefully tune in the first station to be set up.
4. Adjust a signal generator to zero beat with this station. NOTE: While it is advisable to use a signal generator for accuracy, it is not an absolute necessity.
5. Turn the band switch to "PB" position.
6. Push the button to be set up, making sure to select a button having the proper frequency range to include the station you are setting. See Figure 3.
7. The tuner adjustment screws are accessible from the back of the radio. (See Figure 2).
8. Adjust the oscillator screw until the signal from the generator, or station is heard. Carefully adjust the screw to maximum volume.
9. Now adjust the antenna trimmer screw for maximum volume.
10. Follow the same procedure for the remaining buttons.
11. It is advisable, after all buttons are set up, to repeat steps 6, 8 and 9 for maximum performance

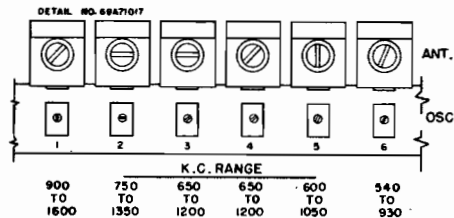


FIGURE 3. PUSH BUTTON SET-UP DETAIL

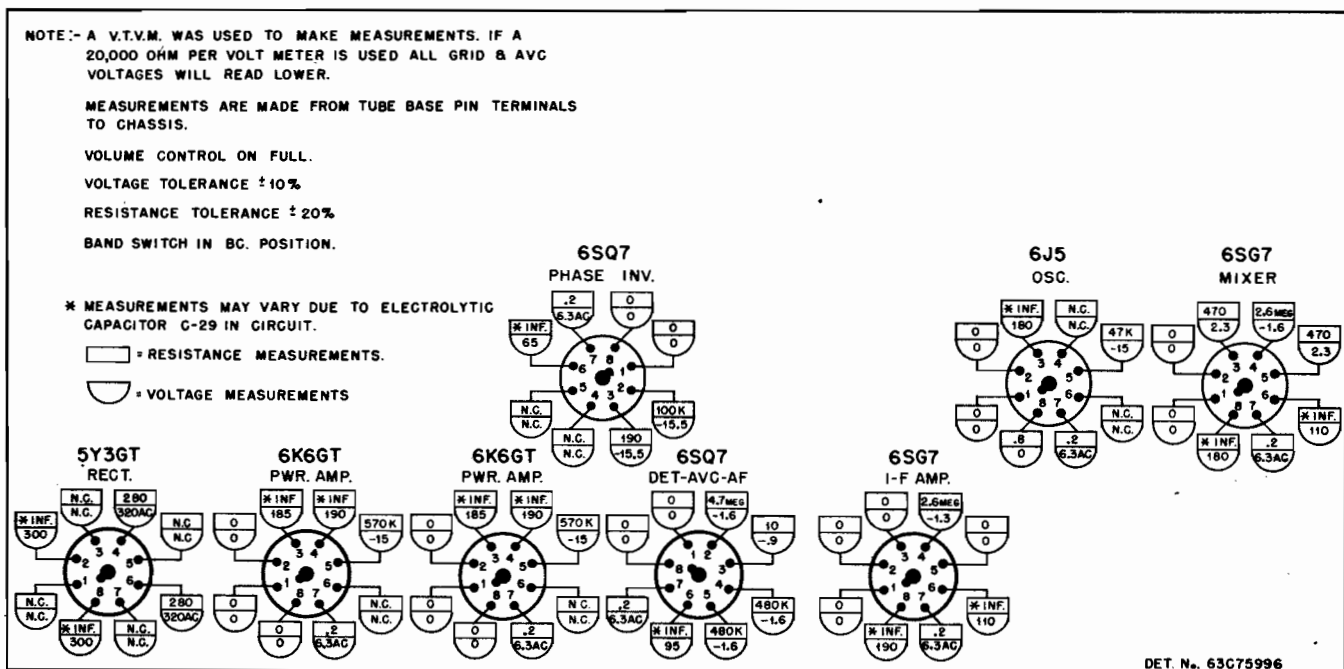


FIGURE 4. VOLTAGE & RESISTANCE DIAGRAM

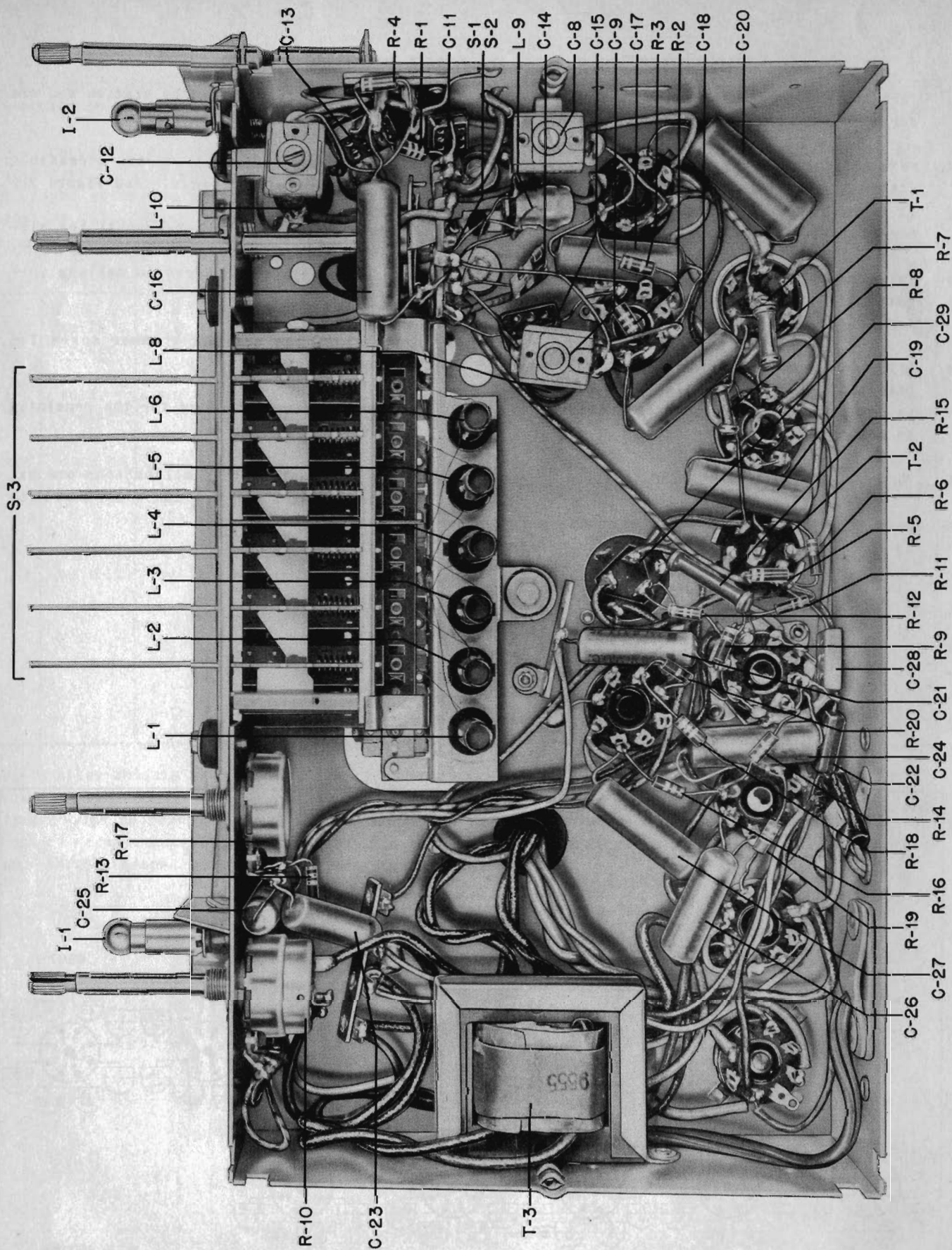


FIGURE 5. PARTS LOCATION, BOTTOM VIEW

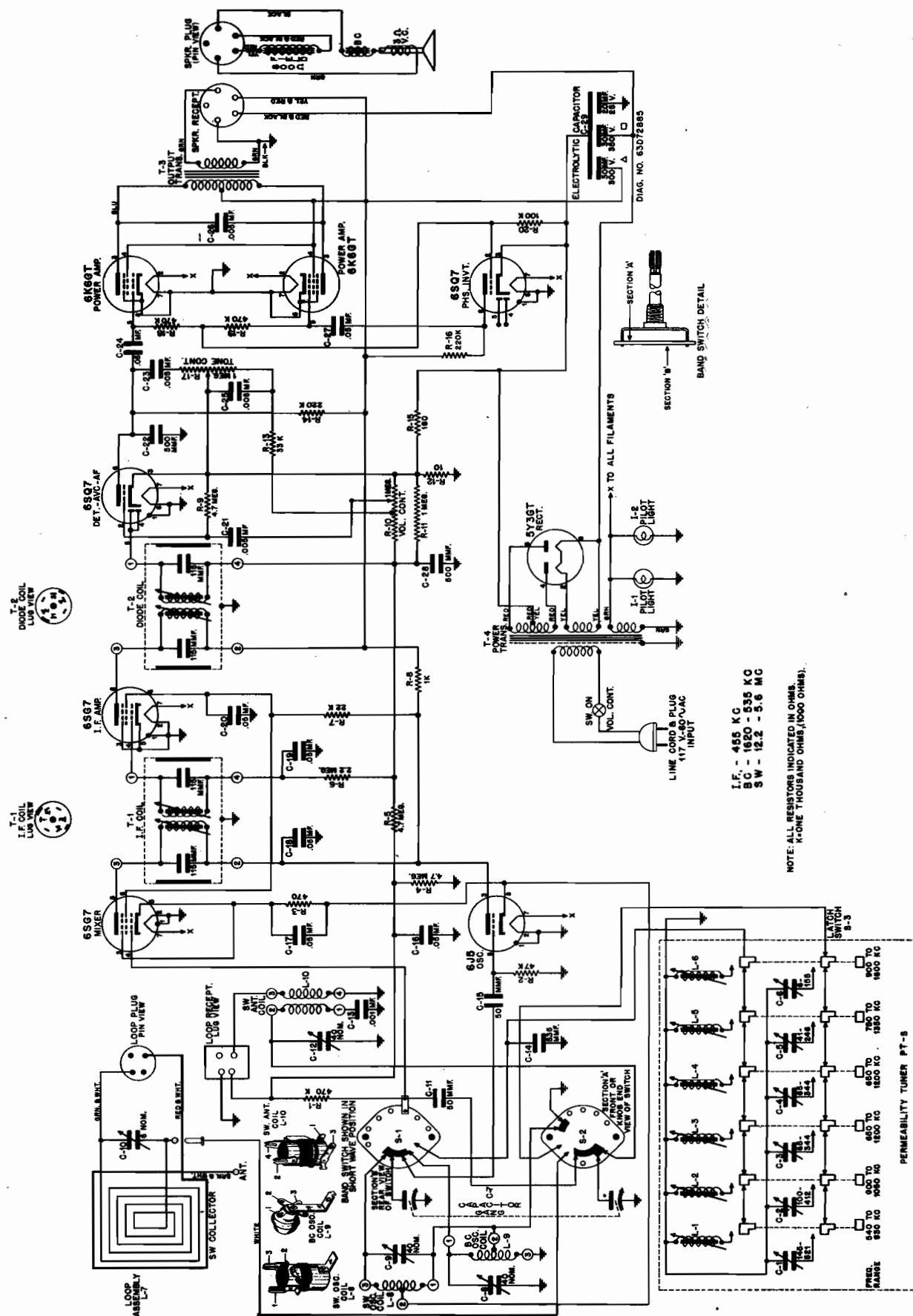


FIGURE 6. SCHEMATIC DIAGRAM

PARTS PRICE LIST MODEL 85K21 CHASSIS HS-52

REF. NO.	PART NO.	DESCRIPTION	LIST PRICE	REF. NO.	PART NO.	DESCRIPTION	LIST PRICE
CAPACITORS							
C-1 to C-6		Capacitor and Mounting Strip Assembly, push button tuning; See Permeability Tuner PT-8 Parts List	---				
C-7	1X72363	Variable: 2 gang; with pulley	4.25				
C-8	20A71140	Mica trimmer: 10-80 mmf	.30				
C-9	20A71141	Mica trimmer: 10-80 mmf; includes "L" mtg. bracket	.30				
C-10	20A71226	Mica trimmer: 2-12 mmf; includes mtg. bracket	.30				
C-11	21R6642	Mica: 50 mmf 500V	.30				
C-12	20A71125	Mica trimmer: 10-80 mmf; includes "L" mtg. bracket	.20				
C-13	21R2724	Mica: .001 mmf 5% 500V	.30				
C-14	21A28020	Silver mica: 535 mmf 3%	.40				
C-15	21R6642	Mica: 50 mmf 500V	.20				
C-16	8S9816	Paper: .05 mf 400V	.20				
C-17	8S9816	Paper: .05 mf 400V	.20				
C-18	8S9816	Paper: .05 mf 400V	.20				
C-19	8S9816	Paper: .05 mf 400V	.20				
C-20	8S9816	Paper: .05 mf 400V	.20				
C-21	8S9813	Paper: .005 mf 600V	.20				
C-22	21R6639	Mica: 500 mmf 500V	.30				
C-23	8S9813	Paper: .005 mf 600V	.20				
C-24	8S9816	Paper: .05 mf 400V	.20				
C-25	8S9813	Paper: .005 mf 600V	.20				
C-26	8S9813	Paper: .005 mf 600V	.20				
C-27	8S9816	Paper: .05 mf 400V	.20				
C-28	8S6639	Mica: 500 mmf 500V	.30				
C-29	23A27718	Electrolytic: 30-30-20 mf/350-300-25V	2.70				
DIAL LIGHTS							
I-1							
I-2	65X4151	6-8V; bayonet base; type #51	.15				
COILS							
L-1 to L-6		Coil Assembly, P.B. oscillator: See Permeability Tuner PT-8 Parts List	---				
L-7	24K71287	Loop Assembly, antenna: complete: includes loop, trimmer and lead assembly	4.25				
L-8	24A70549	S.W. oscillator	.30				
L-9	24A70546	B.C. oscillator	.30				
L-10	24A70548	S.W. antenna	.20				
RESISTORS							
		Note: All resistors are 1/2w 20% insulated type unless otherwise specified	.30				
R-1	6R6032	470,000 1/2w	.40				
R-2	6R6056	47,000 1/2w	.20				
R-3	6R6090	470 1/2w	.20				
R-4	6R2122	4.7 meg 1/2w	.20				
R-5	6R2122	4.7 meg 1/2w	.20				
R-6	6R3927	2.2 meg 1/2w	.20				
R-7	6R6088	22,000 1/2w N.I.	.20				
R-8	6R6053	1000 1/3w N.I.	.20				
R-9	6R2122	4.7 meg 1/2w	.30				
R-10	18A70068	Volume control: carbon; 1 meg; with SPST switch; tapped at 300,000 ohms	.20				
R-11	6R6004	1 meg 1/2w	.20				
R-12	6R5621	10 1/2w	.20				
R-13	6R6012	33,000 1/2w	.20				
R-14	6R6015	220,000 1/2w	.30				
R-15	6R6116	180 1w N.I.	2.70				
R-16	6R6015	220,000 1/2w					
R-17	18A70087	Tone control: carbon; 1 meg.					
R-18	6R6032	470,000 1/2w	.15				

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REF. NO.	PART NO.	DESCRIPTION	LIST PRICE	REF. NO.	PART NO.	DESCRIPTION	LIST PRICE
<u>RESISTORS (continued)</u>							
R-19	6R6032	470,000 1/2w	doz.		5A71081	Eyelet, chassis mounting: 1/4" x 1/4" diameter body; 1/4 diameter head	doz.
R-20	6R6075	100,000 1/2w	doz.		5A72771	Grommet, rubber: 1-1/8" O.D. x 3/4" I.D. x 3/8" thick (light shield)	.15
<u>SPEAKER</u>							
	50B72379	Electrodynamic; 10"; 800 ohm field; 3.2 ohm V.C.	10.75		5A71092	Grommet, rubber: 5/8" x 3/4" diameter (chassis mounting)	.10
<u>SWITCHES</u>							
S-1 &					5A70404	Grommet, rubber: gang cushion	.50
S-2	40A71127	Band selector: three position	1.65		5A71130	Grommet, rubber: 1/4" x 1/2" diameter	.60
S-3	--	Switch Assembly, push button: See Permeability Tuner PT-8 Parts List	---			Grommet, rubber: 1/4" x 1/2" diameter body; 3/4" diameter head (chassis retainer)	doz.
<u>TRANSFORMERS</u>							
T-1	24B70545	I.F.: 455 kc; complete with iron cores and padding capacitors, but less shield	2.45		36K72889	Knob, control: plain	.10
					36K72890	Knob, control: branded	.35
					1X72384	Lead Assembly, speaker: four conductor; with receptacle	.35
T-2	24B70537	Diode: 455 kc; complete with iron cores and padding capacitors, but less shield	2.45		32A24815	Lock, line cord: fibre	.70
					4S7655	Lockwasher, steel: 3/8 internal; cadmium plated (band switch mounting)	.25
T-3	25B27861	Output	3.15		4S1378	Nut, steel: 3/8-32 x 1/2" hex; cadmium plated (band switch mounting)	.40
T-4	25B28035	Power	7.65		2S7051	Nut, steel: 3/8-32 x 9/16" hex; cadmium plated (band switch mounting)	.50
						Nut, steel: 3/8-32 x 9/16" hex; palnut; cadmium plated (volume & tone control mounting)	.15
<u>MISCELLANEOUS</u>							
	38B71139	Button, push: plastic (includes insert spring 41A12893)	.05		9A12705	Plate, electrolytic capacitor mounting: bakelite	.30
	16E72317	Cabinet Assembly; console type	---		28K19871	Plug, 4 pin (antenna loop)	.10
	35K71223	Cloth grille	---		52A71280	Pointer, dial	.20
	14M8944	Cord, dial: 18 lb. black	yd.		49A21741	Pulley, cord: 3/8" groove (cord guide)	.30
	30K21859	Cord, line: 9 ft. long; with plug	1.00		9K28049	Receptacle, 4 prong: bakelite (loop antenna receptacle)	.10
	1X72349	Dial Bracket & Slider Assembly: complete; includes dial brackets, pulleys, pulley mounting brackets, slider rail and pointer slider (does not include dial scale and pointer.			5A71246	Rivet, shoulder: 3/8" long; nickel plated (pulley mtg.)	.15
					1X72789	Scale, dial: glass; with dial light housing covers and light shields	doz.
					3S1312	Screw, steel: 4 x 1-1/8 Phillips oval head wood screw; bronze finish (escutcheon mtg.)	7.90
	13C72362	Escutcheon, dial (lower) plastic	1.40		3S7534	Screw, steel: 4 x 1-3/8" PKA slotted sheet metal screw; cadmium plated (chassis mounting)	.30
	13B72361	Escutcheon, dial (upper) plastic	.80				.15

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MISCELLANEOUS (continued)		COILS	
47A71129	Shaft, tuning	.20	
1A71049	Shield & Iron Core Sleeve Assembly (for I. F. or diode transformer)	.30	1X72416
9A71290	Socket, pilot light: with bracket	.25	
9A6790	Socket, tube: molded octal; plain type (for all but I. F. amp)	.15	1X72417
9A6788	Socket, tube: (replacement) molded octal; plain type (to be used in place of 9A6790 when mounting lugs on chassis break off)	.20	1X72418
9A6792	Socket, tube: molded octal; with center shield (for I. F. amp)	.15	1X72419
9A70165	Socket, tube: (replacement) molded octal; with center shield (to be used in place of 9A6792 when mount- ing lugs on chassis break off)	.35	1X72420
41A14244	Spring, tension coil (pilot cord)	.55	
41A14111	Spring, tension coil (drive cord)	.40	
31K74933	Strip, terminal: 2 insulated lugs; #3 mounting	.60	
31A71126	Strip, terminal: 3 insulated lugs; #2 ground	.90	
32A27678	Strip, shaft bearing: fibre (for band switch shaft)	.30	
38C70588	Tabs, call letter	.35	
4A21577	Washer, "C" (used on tuning shaft)	.50	
4A71133	Washer, spring (used on tuning shaft)	.20	
PERMEABILITY TUNER			
1X71110	Permeability Tuner PT-8; complete: with 1-7/8" push button shaft	12.10	
CAPACITORS			
C-1			
C-6	20A72336 Capacitor and Mounting Strip Assembly: capacitors not replaceable separately; consist of - C-1, 145-521 mmf; C-2, 100-412 mmf; C-3, 65-344 mmf; C-4, 65-344 mmf; C-5, 41-246 mmf; C-6, 8-155 mmf.	2.05	
SWITCH			
S-3	40B71105 Switch Assembly, push button: with 1-7/8" push button shaft	3.60	
MISCELLANEOUS			
5A70098	Eyelet, steel: 23/64 thick x 7/32" I.D. x 1/2" diameter head (tuner mounting)	.20	
5A70404	Grommet, rubber (tuner mounting)	.60	
3S8175	Screw, steel: #4 x 3/16" PKZ slotted hex head; sheet metal screw; cadmium plated (trimmer mounting)	.50	

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